

Missouri Department of Natural Resources



PUBLIC NOTICE

APPLICATION FOR MISSOURI STATE OPERATING PERMIT

DATE: August 11, 2006

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed effluent limitations and/or determinations are invited to submit them in writing to the Department of Natural Resources, Southwest Regional Office, Water Pollution Unit, 2040 W. Woodland, Springfield, Missouri 65807, ATTN: Cynthia S. Davies, Regional Director. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The department may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by September 10, 2006 or received in our office by 5:00 p.m. on September 13, 2006. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits, comments, and other information including copies of applicable regulations are available for inspection and copying at the department's website, <http://www.dnr.mo.gov/env/wpp/wpcp-pn.htm> or at the Department of Natural Resources, Southwest Regional Office, Water Pollution Unit, 2040 W. Woodland, Springfield, Missouri 65807, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

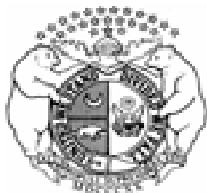
Public Notice Date: August 11, 2006

Permit Number: MO-0118630

Southwest Regional Office

| FACILITY NAME AND ADDRESS | NAME AND ADDRESS OF OWNER |
|--|--|
| Hidden Ridge Estates WWTF 370 Salem Road Branson, MO 65771 | Mr. Danny R. Brown 4279 Highway 160 Walnut Shade, MO 65771 |
| RECEIVING STREAM & LEGAL DESCRIPTION | TYPE OF DISCHARGE |
| Tributary to East Fork Roark Creek SW ¹ / ₄ , NE ¹ / ₄ , SW ¹ / ₄ , Sec. 35, T24N, R22W Taney County | Domestic, new |

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

| | |
|---------------------------------|--|
| Permit No. | MO-0118630 |
| Owner: | Danny R. Brown |
| Address: | 4279 Highway 160, Walnut Shade, MO 65771 |
| Continuing Authority: | Same as above |
| Address: | Same as above |
| Facility Name: | Hidden Ridge Estates WWTF |
| Facility Address: | 370 Salem Road, Branson, MO 65616 |
| Legal Description: | SW¼, NE¼, SW¼, Sec. 35, T24N, R22W, Taney County |
| Receiving Stream: | Unnamed Tributary to East Fork Roark Creek (U) |
| First Classified Stream and ID: | Roark Creek 2 (C) (02438) |
| USGS Basin & Sub-watershed No.: | (11010003-030002) |

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION

Outfall #001 – Mobile Home Park / Sewerage Works - SIC #4952 / 4952

Septic tank / recirculating gravel filter / chemical addition to facilitate phosphorus removal / ultraviolet disinfection / sludge disposal by contract hauler.

Design organic population equivalent is 303.
Design average daily flow is 22,725 gallons per day.
Design sludge production is 3.03 dry tons/year.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Doyle Childers, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date
MO 780-0041 (10-93)

Cynthia S. Davies, Regional Director, Southwest Regional Office

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PAGE NUMBER 2 of 5

PERMIT NUMBER MO-0118630

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until **October 31, 2009**. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

| OUTFALL NUMBER AND EFFLUENT PARAMETER(S) | UNITS | INTERIM EFFLUENT LIMITATIONS | | | MONITORING REQUIREMENTS | |
|--|----------|------------------------------|----------------|-----------------|-------------------------|--------------|
| | | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| <u>Outfall #001</u> | | | | | | |
| Flow | GPD | * | | * | once/month** | 24 hr. total |
| Biochemical Oxygen Demand ₅ | mg/L | | 15 | 10 | once/month** | *** |
| Total Suspended Solids | mg/L | | 20 | 15 | once/month** | *** |
| pH – Units | SU | **** | | **** | once/month** | grab |
| Fecal Coliform (Note 1) | #/100 ml | 1000 | | 400 (Note 2) | once/month** | grab |
| Total Phosphorus as P | mg/L | | | 0.5 | once/month** | grab |
| Ammonia as N (November 1 – March 31) | mg/L | | | 3.0 | once/month** | grab |
| (April 1 – October 31) | | | | 2.0 | | |

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

| A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued) | | | | | PAGE NUMBER 3 of 5 | |
|--|----------|----------------------------|----------------|-----------------|--------------------------|--------------|
| | | | | | PERMIT NUMBER MO-0118630 | |
| The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective November 1, 2009 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below: | | | | | | |
| OUTFALL NUMBER AND EFFLUENT PARAMETER(S) | UNITS | FINAL EFFLUENT LIMITATIONS | | | MONITORING REQUIREMENTS | |
| | | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MEASUREMENT FREQUENCY | SAMPLE TYPE |
| <u>Outfall #001</u> | | | | | | |
| Flow | GPD | * | | * | once/month** | 24 hr. total |
| Biochemical Oxygen Demand ₅ | mg/L | | 15 | 10 | once/month** | *** |
| Total Suspended Solids | mg/L | | 20 | 15 | once/month** | *** |
| pH – Units | SU | **** | | **** | once/month** | grab |
| Fecal Coliform (Note 1) | #/100 ml | 1000 | | 400 (Note 2) | once/month** | grab |
| Total Phosphorus as P | mg/L | | | 0.5 | once/month** | grab |
| Ammonia as N | mg/L | | | | once/month** | grab |
| (March 1 – May 31) | | 6.8 | | 3.4 | | |
| (June 1 – August 31) | | 3.2 | | 1.6 | | |
| (September 1 – November 30) | | 6.8 | | 3.4 | | |
| (December 1 – February 29) | | 7.5 | | 3.8 | | |
| MONITORING REPORTS SHALL BE SUBMITTED <u>MONTHLY</u> ; THE FIRST REPORT IS DUE _____. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS. | | | | | | |
| B. STANDARD CONDITIONS | | | | | | |
| IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980 and August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN. | | | | | | |

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

* Monitoring requirement only.

** Reports shall be submitted by the 28th day of the month following the reporting period, e.g. Reporting period is the month of March (samples collected monthly), report due by April 28th.

*** A composite sample made up from a minimum of four grab samples collected within a 24-hour period with a minimum of two hours between each grab sample. A person may physically collect the four grab samples or a composite sampler may be set up to collect the four grab samples.

**** pH is measured in pH units and is not to be averaged. The pH for all facilities except lagoons is limited to the range of 6.0-9.0 pH units.

Note 1 - Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.

Note 2 - Monthly average limit for Fecal Coliform is expressed as a geometric mean. Geometric mean for

$$n \text{ samples} = [a_1 \times a_2 \times a_3 \dots \times a_n]^{1/n}$$

C. SPECIAL CONDITIONS

1. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

2. All outfalls must be clearly marked in the field.
3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability.
4. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
 - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.
5. Report as no-discharge when a discharge does not occur during the report period.
 6. Water Quality Standards

- (a) Discharges to waters of the state shall not cause a violation of water quality standards rule under 10 CSR 20-7.031, including both specific and general criteria.
- (b) General Criteria. The following general water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
 - (1) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;

C. SPECIAL CONDITIONS (continued)

- (2) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
- (3) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
- (4) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
- (5) There shall be no significant human health hazard from incidental contact with the water;
- (6) There shall be no acute toxicity to livestock or wildlife watering;
- (7) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
- (8) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

7. Sludge and Biosolids Use For Domestic Wastewater Treatment Facilities

- (a) Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
- (b) If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

D. SCHEDULE OF COMPLIANCE

The new ammonia limits will go into effect on **November 1, 2009**. If construction is not needed to meet the limit, no further action needs to be taken.

Prior to this date if construction is needed to meet the new limits then the following shall occur:

1. By **April 15, 2007** submit a completed application for construction permit, application fee, and one copy each of an engineering report, plans and specifications prepared by a professional engineer registered in the State of Missouri to the Missouri Department of Natural Resources, 2040 West Woodland, Springfield, Missouri, 65807, for providing wastewater treatment facility improvements to comply with the final effluent limitations as list in Part A of this permit, designed in accordance with Missouri Clean Water Law Regulation 10 CSR 20 Chapter 8.
2. Within fifteen (15) calendar days of receipt of any request for additional information or changes in the engineering report, plans or specifications, respond and if necessary submit engineering modifications to the department.
3. Within 365 calendar days of issuance of the construction permit, construct the permitted wastewater treatment facility improvements.
4. Within fifteen (15) calendar days of completion of construction of wastewater treatment facility improvements, submit a Statement of Work Completed form, signed, sealed, and dated by a professional engineer registered in the State of Missouri certifying that the project has been completed substantially in accordance with the approved plans and specifications. In addition to the Statement of Work Completed, submit an application for a Missouri State Operating Permit modification complete with the appropriate modification fee to the Missouri Department of Natural Resources, 2040 West Woodland, Springfield, Missouri, 65807.

If you have questions you may contact the Missouri Department of Natural Resources, Southwest Regional Office by calling 417-891-4300 or by mail at 2040 West Woodland, Springfield, Missouri, 65807.



**Missouri Department of Natural Resources
Southwest Regional Office
NPDES Permits and Engineering Section**

Water Quality Review Sheet

Determination of Effluent Limits

Facility Information

FACILITY NAME: Hidden Ridge Estates NPDES #: MO-0118630

FACILITY TYPE/DESCRIPTION: Septic tank / recirculating gravel filter / chemical addition to facilitate phosphorus removal / ultraviolet disinfection / sludge disposal by contract hauler.

EDU*: Ozark / White 8-DIGIT HUC: 11010003 COUNTY: Taney
* - Ecological Drainage Unit

LEGAL DESCRIPTION: SW¼, NE¼, SW¼, Sec. 35, T24N, R22W LATITUDE/LONGITUDE: UTMS: X: 474666.9
Y: 4065417.6

WATER QUALITY HISTORY: Exceeded Total Phosphorus limits in October 2002, July 2002, and April 2002.
Exceeded Fecal Coliform in April 2002.

| OUTFALL | DESIGN FLOW (CFS) | TREATMENT LEVEL | RECEIVING WATERBODY | DISTANCE TO CLASSIFIED SEGMENT (MI) |
|---------|-------------------|-----------------|--|-------------------------------------|
| 001 | 0.035 | Secondary | Unnamed Tributary to East Fork Roark Creek | 3.4 |

RECEIVING WATERBODY INFORMATION

| WATERBODY NAME | CLASS | WBID | LOW-FLOW VALUES (CFS) | | | DESIGNATED USES ** |
|--|-------|-------|-----------------------|------|-------|--------------------|
| | | | 1Q10 | 7Q10 | 30Q10 | |
| Unnamed Tributary to East Fork Roark Creek | U | | 0 | 0 | N/A | None |
| Roark Creek 2 | C | 02348 | 0 | 0 | 0.1 | LWW,AQL,WBC,SCR |

** Irrigation (IRR), Livestock & Wildlife Watering (LWW), Protection of Warm Water Aquatic Life and Human Health-Fish Consumption (AQL), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation (WBC), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND)

COMMENTS: The facility is renewing their permit. The facility previously had ammonia limits. Upon conducting reasonable potential as shown below, it was determined that ammonia limits will need to stay within the permit. The Ammonia limits were recalculated using the new regulation (10 CSR 20-7 Table B). No other changes will be made.

MIXING CONSIDERATIONS

Mixing Zone (MZ): Not allowed. Discharges to a losing stream.

Zone of Initial Dilution (ZID): Not allowed. Discharges to a losing stream.

| | Flow (cfs) | MZ (cfs) | ZID (cfs) |
|--------------|------------|----------|-----------|
| <u>7Q10</u> | 0 | 0 | 0 |
| 1Q10 | 0 | 0 | 0 |
| 30Q10 | 0 | 0 | N/a |

Applicable mixing zone regulation:

PERMIT LIMITS AND INFORMATION

WASTELOAD ALLOCATION
STUDY CONDUCTED (Y OR N):

N

USE ATTAINABILITY
ANALYSIS CONDUCTED (Y OR N):

N

WHOLE BODY CONTACT
USE RETAINED (Y OR N):

N

OUTFALL #001

WET TEST (Y OR N):

N

FREQUENCY:

N/A

AEC:

N/A

METHOD:

N/A

$$\text{A.E.C. \%} = \left(\frac{\text{Design Flow} + \text{Zone of Initial Dilution}}{\text{Design Flow}} \right)^{-1} \times 100$$

| PARAMETER | DAILY MAXIMUM | WEEKLY AVERAGE | MONTHLY AVERAGE | MONITORING FREQUENCY |
|---|------------------|-------------------|--------------------|-------------------------|
| FLOW | MONITOR | | MONITOR | |
| BOD ₅ (MG/L) | | 10 | 15 | |
| TSS (MG/L) | | 15 | 20 | |
| PH (S.U.) | 6-9 | | 6-9 | |
| AMMONIA AS N (MG/L) (MARCH – MAY) | 6.8 | | 3.4 | |
| AMMONIA AS N (MG/L) (JUNE - AUGUST) | 3.2 | | 1.6 | |
| AMMONIA AS N (MG/L) (SEPTEMBER - NOVEMBER) | 6.8 | | 3.4 | |
| AMMONIA AS N (MG/L) (DECEMBER - FEBRUARY) | 7.5 | | 3.8 | |
| TOTAL PHOSPHORUS AS P (MG/L) | | | 0.5 | |
| FECAL COLIFORM (COLONIES/100 mL) | 1000 | | 400 | |

Please report the date, time, and location for each parameter sampled along with the average daily flow (actual flow measured or estimated, not design flow). All the parameters should be sampled on the same day and within no more than a 2-hour period. Dissolved oxygen (DO) measurements are to be taken during the period from one hour prior to sunrise to one and one-half hour after sunrise. If discharge is contingent to storm events, rainfall should be measured every time there is a discharge.

RECEIVING WATER MONITORING REQUIREMENTS

No receiving water monitoring requirements recommended at this time.

DERIVATION AND DISCUSSION OF LIMITS

Wasteload allocations were calculated using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)} \quad (\text{EPA/505/2-90-001, Section 4.5.5})$$

Where C = downstream concentration
Cs = upstream concentration
Qs = upstream flow
Ce = effluent concentration
Qe = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Biochemical Oxygen Demand (BOD₅): 10 mg/L monthly average, 15 mg/L weekly average [10 CSR 20-7.015(4)(B)1.]

Total Suspended Solids (TSS): 15 mg/L monthly average, 20 mg/L weekly average [10 CSR 20-7.015(4)(B)2.]

pH: pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015(4)(B)3.]

Reasonable Potential Analysis Effluent limits for Ammonia have been retained as a result of the reasonable potential analyses. Electronic copies of the reasonable potential analyses are available upon request.

| PARAMETER | CMC (G/L) | RECEIVING WATER CONCENTRATION (G/L) | CCC (G/L) | RECEIVING WATER CONCENTRATION (G/L) | REASONABLE POTENTIAL |
|-----------------|---------------|---|----------------|---|----------------------|
| Ammonia as N | 12.1 | 3 | 1.5 Summer | 3 | Yes |
| Ammonia as N | 12.1 | 3 | 2.8 Fall | 3 | Yes |
| Ammonia as N | 12.1 | 3 | 3.1 Winter | 3 | No |
| Ammonia as N | 12.1 | 3 | 22.8 Spring | 3 | Yes |

Even though there is no Reasonable Potential for Ammonia in the Winter, Ammonia limits will be added to all seasons.

Ammonia as Nitrogen. Total Ammonia Nitrogen – Early Life Stages Present criteria apply 10 CSR 20-7.031(4)(B)7.C. & Table B3. Background ammonia as nitrogen for receiving stream is assumed to be = 0.037 mg/L.

| Season | Temp (°C) | pH (SU) | Total Ammonia Nitrogen CCC (mg/L) | Total Ammonia Nitrogen CMC (mg/L) |
|--------|-----------|---------|--------------------------------------|--------------------------------------|
| Summer | 28 | 7.8 | 1.3 | 12.1 |
| Fall | 16 | 7.8 | 2.8 | 12.1 |
| Winter | 6 | 7.8 | 3.1 | 12.1 |
| Spring | 16 | 7.8 | 2.8 | 12.1 |

Summer: June 1 – August 31, Fall: September 1 – November 30, Winter: December 1 – February 29, Spring: March 1 – May 31.

$$C_e = ((Q_e + Q_s)C - (Q_s * C_s))/Q_e$$

Spring – Chronic WLA = 2.8 mg N/L, Acute WLA = 12.1 mg N/L. No mixing zone is allowed.

Chronic

$$C_e = ((0.035 + 0.0)2.8 - (0.0 * 0.037))/0.035$$

$$C_e = 2.8 \text{ mg/L}$$

$$WLA_c = 2.8 \text{ mg/L}$$

Acute

$$C_e = ((0.035 + 0.0)12.1 - (0.0 * 0.037))/0.035$$

$$C_e = 12.1 \text{ mg/L}$$

$$WLA_a = 12.1 \text{ mg/L}$$

$$LTA_c = 2.8 \text{ mg/L} (0.780) = 2.2 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}, n = 30]$$

$$LTA_a = 12.1 \text{ mg/L} (0.321) = 3.9 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of LTA_c or LTA_a .

$$MDL = 2.2 \text{ mg/L} * 3.11 = 6.8 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$AML = 2.2 \text{ mg/L} * 1.55 = 3.4 \text{ mg N/L}$$

$$[CV = 0.6, 95^{\text{th}} \text{ Percentile}, n = 4]$$

Summer – Chronic WLA = 1.3 mg N/L, Acute WLA = 12.1 mg N/L. No mixing zone is allowed.

Chronic

$$C_e = ((0.035 + 0.0)1.3 - (0.0 * 0.037))/0.035$$

$$C_e = 1.3 \text{ mg/L}$$

$$WLA_c = 1.3 \text{ mg/L}$$

Acute

$$C_e = ((0.035 + 0.0)12.1 - (0.0 * 0.037))/0.035$$

$$C_e = 12.1 \text{ mg/L}$$

$$WLA_a = 12.1 \text{ mg/L}$$

$$LTA_c = 1.3 \text{ mg/L} (0.780) = 1.014 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}, n = 30]$$

$$LTA_a = 12.1 \text{ mg/L} (0.321) = 3.9 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of LTA_c or LTA_a .

$$MDL = 1.014 \text{ mg/L} * 3.11 = 3.2 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$AML = 1.014 \text{ mg/L} * 1.55 = 1.6 \text{ mg N/L}$$

$$[CV = 0.6, 95^{\text{th}} \text{ Percentile}, n = 4]$$

Fall - Chronic WLA = 2.8 mg N/L, Acute WLA = 12.1 mg N/L. No mixing zone is allowed.

Chronic

$$C_e = ((0.035 + 0.0)2.8 - (0.0 * 0.037)) / 0.035$$

$$C_e = 2.8 \text{ mg/L}$$

$$WLA_c = 2.8 \text{ mg/L}$$

Acute

$$C_e = ((0.035 + 0.0)12.1 - (0.0 * 0.037)) / 0.035$$

$$C_e = 12.1 \text{ mg/L}$$

$$WLA_a = 12.1 \text{ mg/L}$$

$$LTA_c = 2.8 \text{ mg/L} (0.780) = 2.2 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}, n = 30]$$

$$LTA_a = 12.1 \text{ mg/L} (0.321) = 3.9 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of LTA_c or LTA_a .

$$MDL = 2.2 \text{ mg/L} * 3.11 = 6.8 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$AML = 2.2 \text{ mg/L} * 1.55 = 3.4 \text{ mg N/L}$$

$$[CV = 0.6, 95^{\text{th}} \text{ Percentile}, n = 4]$$

Winter – Chronic WLA = 3.1 mg N/L, Acute WLA = 12.1 mg N/L. No mixing zone is allowed.

Chronic

$$C_e = ((0.035 + 0.0)3.1 - (0.0 * 0.037)) / 0.035$$

$$C_e = 3.1 \text{ mg/L}$$

$$WLA_c = 3.1 \text{ mg/L}$$

Acute

$$C_e = ((0.035 + 0.0)12.1 - (0.0 * 0.037)) / 0.035$$

$$C_e = 12.1 \text{ mg/L}$$

$$WLA_a = 12.1 \text{ mg/L}$$

$$LTA_c = 3.1 \text{ mg/L} (0.780) = 2.4 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}, n = 30]$$

$$LTA_a = 12.1 \text{ mg/L} (0.321) = 3.9 \text{ mg N/L}$$

$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

Use most protective number of LTA_c or LTA_a .

$$MDL = 2.4 \text{ mg/L} * 3.11 = 7.5 \text{ mg N/L}$$

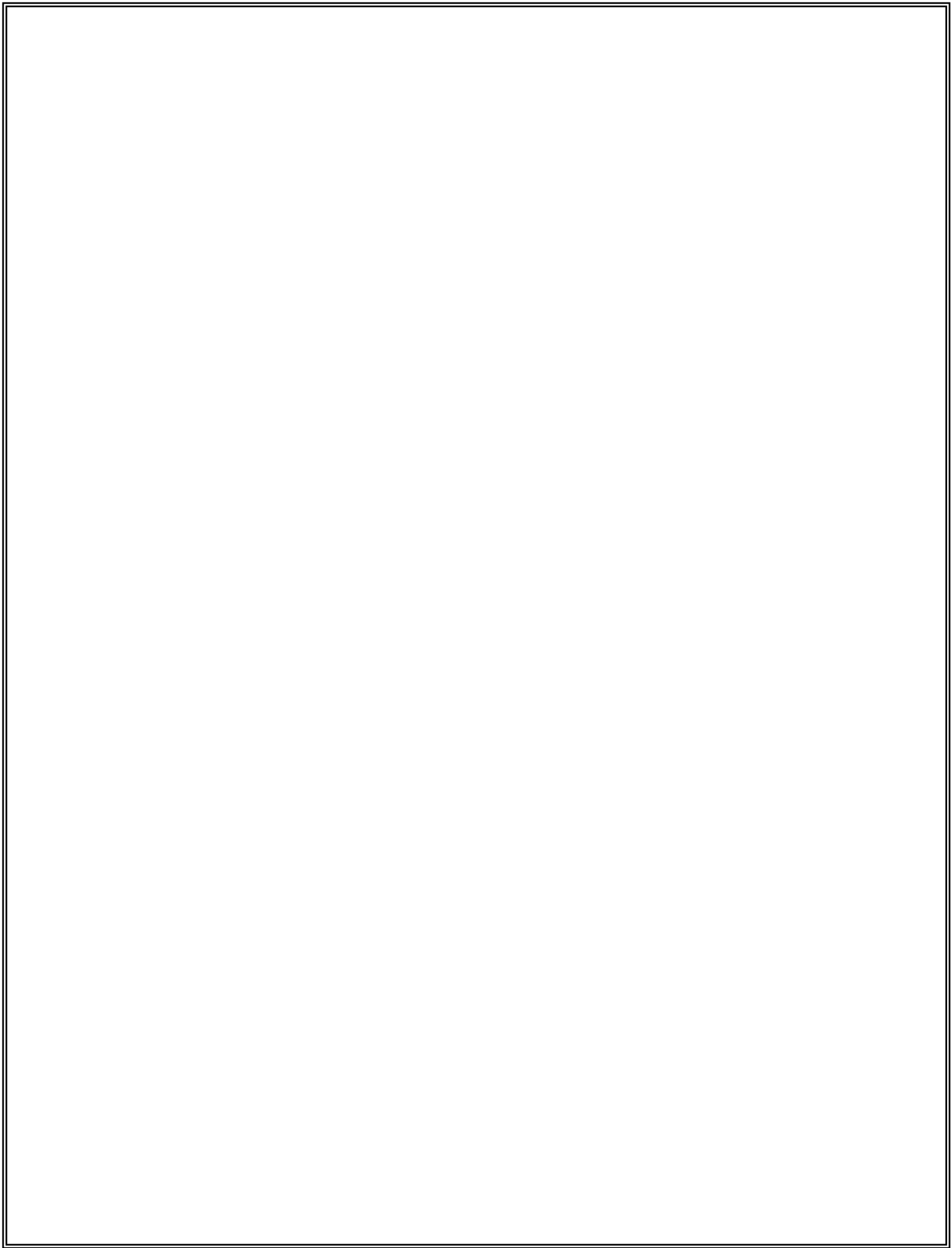
$$[CV = 0.6, 99^{\text{th}} \text{ Percentile}]$$

$$AML = 2.4 \text{ mg/L} * 1.55 = 3.8 \text{ mg N/L}$$

$$[CV = 0.6, 95^{\text{th}} \text{ Percentile}, n = 4]$$

| Season | Maximum Daily Limit (mg/L) | Average Monthly Limit (mg/L) |
|--------|----------------------------|------------------------------|
| Summer | 3.2 | 1.6 |
| Fall | 6.8 | 3.4 |
| Winter | 7.5 | 3.8 |
| Spring | 6.8 | 3.4 |

Total Phosphorous. 0.5 mg/L monthly average as required 10 CSR 20-7.015 (3)(F), discharges to Lake Taneycomo and its tributaries between Table Rock Dam and Power Site Dam shall not exceed five-tenths (0.5) mg/L of phosphorus as a monthly average.



Fecal Coliform: Discharge shall not contain more than a monthly geometric mean of 400 colonies/ 100 mL, daily maximum of 1000 colonies/100 mL [10 CSR 20-7.015(4)(B)4.] Future renewals of the facility operating permit will contain effluent limitations for E. coli which will replace fecal coliform as the applicable bacteria criteria in Missouri's water quality standards.

Reviewer: Kristen Pattinson

Date: July 21, 2006

Unit Chief: Gale Roberts, P.E.

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data are available that may affect the recommended monitoring and effluent limits, please forward these data to the author.